

Anatomy as an Emerging Science and Career Option in View of Medical Students in Bangladesh

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Abstract:

Three hundred and thirty four medical students were questioned regarding their views on anatomy as an emerging science and further career option. A questionnaire with 16 statements was given to these students and their answers were compiled. The results of this study were encouraging. 99% of students consider anatomy as an essential pillar of medical science. A vast majority (94%) felt that a sound knowledge of anatomy helped them in their clinical term. However, more than 50% termed anatomy was difficult to understand and more than two-third agreed to the question that the duration of teaching anatomy should not be limited to one and a half year. Though 73% placed anatomy apart with clinical subjects. More than 80% compared teaching anatomy as favorable as treating a patient. In Bangladesh, lack of satisfactory job opportunities and adequate research facilities limits the uptake of anatomy as a career option. Even with a modified curriculum two third were willing to become an anatomist. A formal course in teaching was welcomed by most in case they sought to become anatomist.

Key words: Anatomy, an emerging science, career option, students view.

Introduction:

Medical career Starts with dissection of human cadavers. The initial exposure to a dead body causes emotional shock to the students^{1,2,3}. However, gradually they adopt a professional attitude and accept dissection as an aid to study the body structure⁴. Dissection not only teaches anatomy but also makes us aware of many other aspects of life, which has been nicely explained by various authors^{5,6,7,8,9}. Cahill and Dalley (1990) mention that study of gross anatomy provides an opportunity for reflection in the intrinsic

values of life and creates empathy for future patient⁵.

It teaches the value of human life¹⁰. Mutyala (1996) mentions that dissection increases the skill of thinking in a logical manner, which helps in all aspects of medicine¹¹. Therefore, it is in the first year of medical college that a positive approach towards the subject can be built. It has been studied that the tendency towards a particular speciality is determined by complex interacting variables e.g. personality of individuals^{12,13}, quality of teaching in the medical college, clinical competence¹⁴, future career aims etc. In the present time anatomy is chosen as a career by very few students.

There is a shortage of teachers in the medical colleges at a global level¹⁵. The number of medically qualified teachers in the preclinical subjects is continuously decreasing¹⁵. This

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situation is particularly severe in the field of anatomy in Bangladesh. Because in our country the actual number of competent and resourceful teachers who can correlate the subject with the other specialty during teaching and make the ideas attractive and innovative and thus enhance the interest of the students are very few. There is an urgent need to increase the awareness amongst students regarding available job opportunities and research possibilities in the subject of anatomy.

The present study has been designed to evaluate the opinion of the medical students regarding anatomy as an emerging science, its advancement in recent medical field, application in various clinical aspects and finally its usefulness as a future career option.

Material and Methods:

The present descriptive cross-sectional study was carried out in four medical colleges in Chittagong, Bangladesh, viz. BGC Trust Medical College, Chattagram Maa O Shishu Hospital Medical College, Chittagong Medical College and Cox's Bazar Medical College. A random sample of three hundred and thirty four medical students were taken from those, willing to participate in the study. Each student was explained the objective of the study and a questionnaire (closed ended) containing 16 items was given to them. The options for answering the questionnaire were in four categories viz. strongly agree, tend to agree, no comment and disagree. After the completion of questionnaire a focus group discussion was done with all students. There was complete anonymity as no names or numbers were mentioned. The data collected was then analyzed. The following important areas were covered in the questionnaire:

1. status of anatomy as a subject and emerging science (item 1,2,3,4)
2. Utility of anatomy later in clinical fields (item 5,6)

3. Duration of teaching anatomy (item 7)
4. Anatomy as a future career option (item 8,9,10)
5. Status of anatomists within medical field (item 11,12,13,14)

Results:

The results are given in Table-I

As shown in the table, 99% of total respondents consider anatomy as an important pillar of medical science and more than 95% feel that good clinician should have sound knowledge of anatomy. Though 55% agreed that it is difficult to learn, 94% agreed that they will be benefited from the subject later in their clinical terms. Majority (about 74%) agreed with the statement that one and a half year was not sufficient to learn anatomy. More than 60% students agreed to take up anatomy if better research facilities and acceptable job opportunities are available, though more than 20% could not give any opinion. With introduction of modified integrated curriculum 71% were willing to become an anatomist and only 5% disagreed with the opinion, though more than 20% did not give any opinion. About 65% could not agree that becoming an anatomist was waste of degree of doctor however, 18% agreed with the same.

While 15% agreed to the fact that students with low ranks took up a career in anatomy, 73% disagreed that as a speciality it had a low status in the medical field.

Regarding clinical skill, more than 90% agreed with the fact that anatomist can better correlate clinically, radiologically and sonographically, only 0.6% disagreed and 5% could not form any opinion. Considering professional satisfaction the response was unequally divided. While more than 80% agreed that teaching anatomy was equally satisfying as treating a patient, 5% did not agree to this and up to 10% had no opinion. A formal course of teaching during training of anatomist was welcome by more than 80% students.

Table-I
The statement and responses to them – Students view

Item No	Strongly agree		Tend to agree		No comment		Disagree	
	No	%	No	%	No	%	No	%
1. Anatomy is not just study of body structure by dissection, it is an important pillar of medical science	320	95.81	12	3.59	2	0.60	0	0
2. It is difficult to understand and retain Anatomy	38	11.38	146	43.71	26	7.78	124	37.13
3. Anatomy is not just study of body structure and their disposition, it is an emerging science now-a-days	224	67.07	88	26.35	18	5.39	2	0.60
4. Anatomy is now more in molecular level. Many things can be explained clinically by knowing molecular Anatomy	204	61.08	80	23.95	42	12.57	8	2.40
5. I am benefited from knowledge of Anatomy later in my clinical terms	272	81.44	44	13.17	14	4.19	4	1.20
6. Every good clinician needs to have a sound knowledge of Anatomy besides the clinical specialties	268	80.24	52	15.57	8	2.40	6	1.80
7. The time allotted for teaching anatomy in the present curriculum is one year and six months and it is not adequate	184	55.09	66	19.76	30	8.98	54	16.17
8. I would like to take up anatomy as a carrier if better research facilities are available	142	42.51	84	25.15	72	21.56	36	10.78
9. I would like to take up anatomy as a carrier if satisfactory job opportunities are provided	118	35.33	98	29.34	90	26.95	28	8.38
10. I would like to be an anatomist if a modified integrated curriculum with other clinical specialties is introduced	138	41.32	102	30.54	76	22.75	18	5.39
11. Graduates with low ranks in the postgraduate entrance examination take up anatomy for further studies	40	11.98	36	10.78	68	20.36	190	56.89
12. An anatomist lacks clinical knowledge and thus wastes his time becoming a doctor	26	7.78	36	10.78	52	15.57	220	65.87
13. An anatomist can better correlate clinically, radiologically and sonographically	210	62.87	102	30.54	20	5.99	2	0.60
14. Anatomy as a discipline has low status within the medical field	32	9.58	20	5.99	36	10.78	246	73.65
15. Teaching Anatomy to students and making them overcome their difficulties gives as much satisfaction as treating a patient rolling in pain	192	57.49	90	26.95	34	10.18	18	5.39
16. I would welcome a formal course in teaching while training to become an anatomist	174	52.10	100	29.94	52	15.57	8	2.40

Discussion

In Bangladesh the total duration of MBBS course is six years including one year internship. Out of these, first one and a half year is scheduled for teaching the pre-clinical subjects, anatomy being one of them. Later there is either very little or no attention paid to the anatomical aspects while discussing aetio-pathogenesis of a clinical case. Thus anatomy tends to lose its credibility as it is not a part of day to day syllabus¹⁶. It is important to note that in our study, a vast majority (99%, including both strongly agree & tend to agree) agreed that anatomy is a basic pillar of medical science. More than 90% respondent agreed that anatomy is an emerging science now a day and more than 60% strongly believed that many things could be explained clinically by knowing molecular anatomy. The result of the present study had a similar accord with the study of Anand et al. (2004)¹⁵.

Monkhouse (1992) has revealed that anatomy encompasses many aspects of the morphological basis of medicine and provides a structural framework for development of clinical logic¹⁷. Our study also highlights that more than 95% of students felt that every good clinician needs to have a sound knowledge of anatomy. Further, it also helped them later in their clinical rotations.

Two interesting studies have been done by Pabst (1993 and 1994) using questionnaires circulated to final year medical students. In the earlier study (1993) more than 60% students thought that anatomy was taught adequately in 1st semester, with more than 90% students expressing interest in idea of reinforcement of the subject by lectures during clinical studies. 75% of all students stated that they would actually have participated in specialized clinical dissection course during their clinical curriculum¹⁸. In the 2nd study, 94% students graded that gross anatomy teaching was "essential"¹⁹. Thus all previous studies similar to ours have rated the clinical significance of anatomy very high.

Medical students are scared of anatomy and up to 55% students felt that it is a difficult subject. As mentioned in the results majority (about 74%) agreed that the time allotted for teaching the

discipline, which, at present, is one and a half year is not enough. This indicates the need to reevaluate the curriculum and to increase the duration of time allotted to the subject.

In medical profession non-clinical teaching specialties are opted for by very few students²⁰. The fresh graduates do not even mention anatomy as a choice for post-graduation^{21,22}. However, in the present study more than 60% students agreed to take up anatomy as a career if suitable job opportunity and further research facilities are provided. A positive response was also found towards the subject if a modified and integrated curriculum is introduced. This situation is particularly encouraging for a country like Bangladesh, where research prospects and reasonable job facilities are still disappointing. A teacher of anatomy cannot be replaced by modern teaching techniques as stated by Chevrel (1995)¹⁶. Therefore, present study indicates an urgent need for immediate measures to improve the situation in our country.

One of the major criteria in selection of a subject as a career is the financial status accorded to it^{23,24,25,26}. Inadequate financial returns are associated with professions involving pre and para-clinical subjects. This has been reported from other countries e.g. USA as stated by Abramson (1991)¹. Though in the present study only 15% of total students agreed with the statement that anatomy had a lower status in the medical field, but more than 60% were actually willing to opt for it in future as mentioned above.

In Bangladesh there are still inadequate jobs and research opportunities for the anatomist. Though it is said that major job of anatomist is to teach students and requires that they be available to the students always²⁴, the experience in subject is mainly determined by research done. Research opportunities can be improved by attaching cytogenetic, hormone assay laboratories etc. with the department of anatomy as in the Euro-American countries¹⁵. This will help to increase patient interaction with the anatomist. With the advent of CT scan and MRI, trained anatomists would be required as cross-sectional anatomy experts¹⁵.

Limited job opportunities also mean that the only option left for a qualified anatomist would be clinical practice. However, it is seen that the confidence to treat any ailment goes down with the years and this is aggravated by lack of knowledge of advanced clinical methods and increased public awareness as stated by Ellis (1994)²⁷. In the present study, however, 65% did not agree that a qualified anatomist lacked knowledge comparable to a clinician. Rather, more than 60% students strongly agreed that an anatomist could better correlate clinically, radiologically and sonographically.

Teaching is an art. A medical doctor with a specialist degree in anatomy may be an unskilled teacher. A formal training course for teaching may benefit him. More than 80% students agreed to this statement.

Conclusion:

This was a cross-sectional study amongst a group of medical students in Chittagong, Bangladesh. A preliminary evaluation of the opinion of medical students as regards anatomy was obtained. Present study suggested a positive mind-set of medical students towards anatomy as an emerging science and they were willing to pursue it as a career provided -

1. A revised integrated teaching schedule of anatomy with other subjects should be prepared to maintain continuity of the subject during clinical rotation in hospitals.
2. Better research and job opportunities should be provided. Research should be need based for Bangladesh. There should be appreciation and recognition of the research work especially at government level.
3. Interaction with patients and other departments and amalgamation of anatomy with other subjects may stimulate the fresh graduates pursue anatomy as a career.
4. There should be periodical training courses for teachers of all medical subjects especially in anatomy to improve the teaching skills.

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References:

1. Abramson S. The dominance of research in staffing medical school time for change? *Lancet* 1991; 337: 1586-8.
2. Evan R, Fitzzibbon GH. The dissecting room reactions of first year medical student. *Clinical Anatomy* 1992; 5: 311-20.
3. Finkelstein P, Matters L. Post traumatic stress among medical students in the anatomy dissection laboratory. *Clinical Anatomy* 1990; 3: 219-26.
4. Yeager VL. Learning gross anatomy dissection and prosection. *Clinical Anatomy* 1996; 9: 57-9.
5. Cahill DR, Dalley AF. A course in gross anatomy notes and comments. *Clinical Anatomy* 1990; 3: 227-36.
6. Charlton R, Dovey SM, Jones DG, Blunnt A. Effect of cadaver dissection on the attitude of medical students. *Medical Education* 1994; 28: 290-5.
7. Druce M, Johnson MH. Human dissection and attitude of preclinical students to death and bereavement. *Clinical Anatomy* 1994; 7: 42-9.
8. Home DJ et al. Reactions of first year medical student to their initial encounter with a cadaver in the dissection room. *Academic Medicine* 1990; 65: 645-9.
9. Penny JC. Reaction of medical students to dissection. *Journal of Medical Education* 1984; 60: 58-60.
10. Weeks SE et al. Human gross anatomy: A crucial time to encourage respect and compassion in students. *Clinical Anatomy* 1995; 8: 69-79.

11. Mutalya S. Catching up. *Clinical Anatomy* 1996; 9: 53-6.
12. Mowbray RM, Psychiatry as a carrier choice. *Australian New Zealand Journal of Psychiatry* 1990; 24: 56-64.
13. Walton HJ. Personality correlates of a career interest in Psychiatry. *British Journal of Psychiatry* 1969; 115: 211-9.
14. Kelley A et al. Medical student attitude to psychiatry. Effect of lack of psychiatric hospital experience. *Medical Education* 1995; 29: 449-51.
15. Anand MK et al. Anatomy as a subject and career option in view of medical students in India. *J.Anat.soc.India* 2004; 53: 10-4.
16. Chevrel JP. The modern teaching of modern anatomy. *Surgical Radiological Anatomy* 1995; 17: 285-6.
17. Monkhouse WS. Anatomy and the medical school curriculum. *Lancet* 1992; 340: 834-5.
18. Pabst R. Gross anatomy: An outdated subject or an essential part of a modern medical curriculum. *The Anatomical Record* 1993; 237: 431-3.
19. Pabst R. Teaching gross anatomy: An important topic for anatomical congresses and journal. *Surgical Radiological Anatomy* 1994;16: 1-2.
20. Schumacher CT. Personal characteristics of students choosing different type of medical career. *Journal of Medical Education* 1964; 39: 278-88.
21. Soufi HE. Attitude of medical student towards psychiatry. *Journal of Medical Education* 1992; 26: 38-41.
22. Tolani B. Continuing medical education and career choice among graduates of problem based and traditional curricula. *Journal of Medical Education* 1991; 25: 414-20.
23. Anand BK. Man power recruitment of medical teacher, measures for meeting the requirements. *Indian Journal of Medical Education* 1992; 31: 50-4.
24. Anantraman V, Kanya R. MBBS students observations on pre and paraclinical subjects. *J Anat Sci* 1995; 14: 31-3
25. Galazika Sim S, Kikano George E, Zyzanski S. Method of recruiting and selecting resident for US family practice residencies. *Academic Medicine* 1994; 4: 1-4.
26. Koivusilla L et al. Health status, does it predict choice in further education. *Journal of epidemiology and community health* 1995; 49: 131-8.
27. Ellis JR. The profession and people. *Journal of Medical Education* 1994; 39: 7-11.